UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,327	05/11/2001	Daniel Marcu	PA3479US	7660

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EXAMINER
SPOONER, LAMONT M

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	09/854,327	MARCU, DANIEL
	Examiner	Art Unit	
	Lamont M. Spooner	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>15 October 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-33</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-33</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>11 May 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Introduction

1.   This office action is in response to applicant's amendment filed

10/15/07. Claims 1-33 are currently pending and have been examined.

Response to Arguments

2.   Applicant's arguments filed 10/15/07, regarding the combination of

Poznanski and Berger have been fully considered but they are not

persuasive.

3.   In response to applicant's argument regarding Poznanski, "Because

assuming that a transformation should have the effect of improving the

structure is not equivalent to 'determining whether one or more of the

modified target language translations represents an improved translation in

comparison with the initial current target translation' as recited in claim 1,

Poznanski (in combination with Berger) can not teach or suggest all claim

limitations, as asserted by the Examiner." However, the Examiner cannot

concur, wherein the "should" by Poznanski, C.4 line 13-15, is not a should,

without a positive determination, Poznanski, explicitly teaches not only

should it, but if it doesn't improve, converge towards a correctly aligned,

word ordered translation, the system will "fail". Thus, the "should" is a

positive step, and not a mere assumption.

4.   In response to applicant's arguments regarding the combination of

Poznanski, Berger, "The context described in Berger, unlike the

morphemes and structure described in Poznanski, does not rely on a set of

grammar rules but rather is based on neighboring words.... At least

because the probabilities described in Berger are not based on

grammatical rules, it is not apparent to one of ordinary skill in the art that

the probabilities described in Berger can be applied to the alignments

taught by Poznanski." However, the Examiner cannot concur, as Berger

explicitly provides motivation and grammatical structure based on POS and

context, C.13 lines 43-57, thus providing sufficient motivation for the

combination of Poznanski and Berger, see also C.8 lines 30-39).

5.   In response to applicant's arguments regarding, motivation,

"Poznanski, rather than providing motivation teaches away from

incorporating additional alignment considerations to evaluate correctness of

a translation." The Examiner cannot concur. Poznanski, teaches

converging on a correct translation. The convergence is based on aligned

words, and a final most correct translation, providing the most correct

translated word order. Thus, it would behoove Poznanski to include an

improved method to converge to correct translation, providing the best

translation.

6.   In response to applicant's arguments over the Official Notice, wherein

"applicant's disagree that repeating translations until a proper translation is

found and/or until the occurrence of a termination condition is well known,"

the Examiner points out the official notice does not state, "repeating

translations until a proper translation is found and/or until the occurrence of

a termination condition". The Official Notice is simply, " a termination

condition can be a predetermined number of iterations, and a lapse of a

predetermined amount of time." see rejection below. Thus applicant's

remarks regarding the Official notice are unresponsive, and not directed

towards the Official notice taken, and furthermore the official notice is now

admitted prior art, as the applicant has not argued, " a termination condition

can be a predetermined number of iterations, and a lapse of a

predetermined amount of time." would not have been well known to one

ordinarily skilled in the art at the time of the invention, as indicated below,

and supported with the motivation of stopping an iterative process that

could possibly go on endlessly in theory, without a termination condition,

two of such being those listed above.

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the

basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8.   Claims 1-33 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Poznanski (US 5,848,385) in view of Berger (US

6,304,841, which properly incorporates Brown et al, (Brown, US 5,477,451

by reference).

As per **claims 1, 15 and 27**, Poznanski teaches a machine

translation decoding method comprising:

receiving as input a text segment in a source language to be

translated into a target language (C.3.lines 50-55);

generating an initial translation as an initial current target language

translation (C.3.lines 59-61);

applying one or more modification operators to the current target language translation to generate one or more modified target language translations (ibid, C.4.lines 1-23);

determining whether one or more of the modified target language translations represents an improved translation in comparison with the current target language translation (ibid, C.4.lines 13-15);

setting a modified target language translation as the current target language translation (ibid, C.4.lines 1-23-his Each transformation should have the effect of improving the structure..., wherein his first attempt at target translation, is the initial translation, and is interpreted as modified and current modified target translation in each transformation-C.5.lines 25-40, where the transformation is translation); and

repeating said applying, said determining and said setting until occurrence of a termination condition (ibid).

However, Poznanski does not explicitly teach, estimating a probability of correctness of the initial translation, the probability based on alignment links between words and phrases in the source language and words and phrases in the target language; estimating a probability of correctness of the one or more modified target language translations, the probability

based on alignment links between words and phrases in the source

language and words and phrases in the target language; comparing the

estimated probability of correctness of the initial language translation with

the estimated probability of correctness of the one or more modified target

language translations; and setting a modified target language translation

<u>with a higher probability based on the comparison</u> as the modified current

target language translation.

However, Berger teaches a probability of correctness of an initial and

modified target language translation, the probability (initial and modified)

based on alignment links between words and phrases in the source

language and words and phrases in the target language, and comparison

thereof (C.2.lines 38-41-inherent to his alignment estimated to be the most

probable-, there must be an initial translation probability, and a modified

translation probability, and comparison thereof; C.15.lines 7-C.16.line31-his

maximum entropy as determining a probability of correctness, the last

iteration being the most/or maximum probability of being correct, by

definition, see maximum entropy and gain discussion C.16-C.28-language

modeling-claim 30, C.23.line 36, 40-48-his termination condition, C.28.line

45-his termination condition, the Examiner interprets, the modifying, gain

and feature improvements to be terminated, once the maximum entropy is

achieve, or the probability of correction, or correct alignment can not be

further bettered, the Examiner further notes that correctness probability

results from alignment links between words and phrases in the source

language and phrases in the target language, see Fig. 6, Fig 7-his

alignments, and previous correctness discussion). Therefore, at the time of

the invention, it would have been obvious to one ordinarily skilled in the art

to modify Poznanski's alignment with Berger's alignment. The motivation

for doing so would have been to determine the most probable alignment

(C.2.lines 40, 41-Berger).

Poznanski and Berger do not explicitly teach setting a modified

language translation with a higher probability based on the comparison as

the modified target language translation. However, this step is necessary

and inherent to Poznanski's improved structure (now containing a method

of measurement of the improvement by the probabilities associated with

the improved structure, as explained in the combination of Poznanski and

Berger set forth above), set as the modified current target language

translation that is to be output, wherein the improved structure would

necessarily be the language translation with <u>a higher probably of being</u> <u>correct</u>, as the probability has now been associated with the translations.

As per **claims 2 and 18**, Poznanski and Berger make obvious teach claim 1, and Poznanski further teaches wherein the text segment comprises a clause, a sentence, a paragraph or a treatise (C.4.lines 29-31).

As per **claim 3**, Poznanski and Berger make obvious claim 1, and Poznanski further teaches wherein generating an initial translation comprises generating a gloss (Fig. 7,C.5.lines 33-53).

As per **claim 4**, Poznanski and Berger make obvious claim 3, and Poznanski further teaches wherein the gloss is a word-for-word gloss or a phrase-for-phrase gloss (ibid).

As per **claim 5**, Poznanski and Berger make obvious claim 1, and Poznanski further teaches wherein applying one or more modification operators comprises changing in the initial current target language translation the translation of one or two words (Fig. 7-like-Fig. 15-likes).

As per **claim 8**, Poznanski teaches claim 1, and Poznanski further teaches wherein applying one or more modification operators comprises modifying an alignment between the source language text segment and the

initial current target language translation by swapping non-overlapping

target language word segments in the initial current target language

translation (Fig. 7 items (i)-(vii), and Fig. 15).

As per **claim 9**, Poznanski teaches claim 1, and further teaches

wherein applying one or more modification operators comprises modifying

an alignment between the source language text segment and the initial

current target language translation by (i) eliminating a target language word

from the initial current target language translation (Fig. 7-to like, fig. 15) and

(ii) linking words in the source language text segment (Fig 7-Plaire a).

As per **claims 19, 20, 21, 28**, claims 19-21 and 28 set forth

limitations similar to claims 1, 3, and 4 and are thus rejected for the same

reasons and under the same rationale.

As per **claim 25**, Poznanski and Berger make obvious claim 15, and

Poznanski further teaches iteratively modifying the translation comprises

performing at each iteration one or more modification operations on the

translation (see claim 1).

As per **claims 6 and 7**, Poznanski and Berger make obvious claim 1,

and Poznanski further teaches wherein applying one or more modification

operators comprises (i) changing in the current target language translation

a translation of a word (see claim 5) but lacks concurrently (ii) inserting

another word at a position that yields an alignment of highest probability

between the source language text segment and the initial current target

language translation , the inserted other word having a high probability of

having a zero-value fertility.

However, Berger teaches changing in the current target language

translation a translation of a word (Fig. 4 his "superior", Fig. 5 his "greater")

concurrently (ii) inserting another word at a position that yields an

alignment of highest probability between the source language text segment

and the current target language translation (Fig. 5. his "than" as the

inserted word, C.2.lines 38-41-his most probable alignment, and Brown,

Fig. 38, his les6-C.31-C33.line 52-his maximum entropy teaches the

highest probability of alignment), the inserted other word having a

substantial probability of having a zero-value fertility (Brown Fig. 38 his les6

interpreted as having zero fertility, and inserted in the English to French

translation, C.64.lines 25-28-his fertility 0), and deleting from the initial

current target language translation a word having a zero-value fertility,

(Brown, C.64.lines 45-51-his "there is nothing about..." is interpreted to be

the deleted words from the current translation, and his zero-fertility, claim 7.

Therefore, at the time of the invention, it would have been obvious to one ordinarily skilled in the art to modify Poznanski's alignment with Berger's alignment. The motivation for doing so would have been to determine the most probable alignment (C.2.lines 40, 41-Berger).

As per **claims 11, 12-14, and 29-32**, Poznanski and Berger make obvious claim 1. Poznanski does not explicitly teach estimating a probability of correctness of the one or more modified target language translations comprises calculating a probability of correctness for each of the one or more modified target language translations and wherein the termination condition comprises a determination that a probability of correctness of a modified target language translation is no greater than a probability of correctness of the current target language translation, wherein the termination condition comprises a completion of a predetermined number of iterations, and a lapse of a predetermined amount of time

Berger further teaches wherein the termination condition comprises a determination that a probability of correctness of a modified target language translation is no greater than a probability of correctness of the current target language translation (C.15.lines 7-C.16.line31-his maximum

entropy as determining a probability of correctness, the last iteration being

the most/or maximum probability of being correct, by definition, see

maximum entropy and gain discussion C.16-C.28-language modeling-claim

30, C.23.line 36, 40-48-his termination condition, C.28.line 45-his

termination condition, the Examiner interprets, the modifying, gain and

feature improvements to be terminated, once the maximum entropy is

achieve, or the probability of correction, or correct alignment can not be

further bettered. Therefore, at the time of the invention, it would have been

obvious to one ordinarily skilled in the art to modify Poznanski's termination

of improving his sequence of translations including modification with a

termination condition, including those listed above. The motivation for doing

so would have been to have a stopping point for an algorithm based upon if

the features improve the likelihood of correctness, (C.23.lines 41-47), time-

out, or predetermined iterations, otherwise the algorithm could run

endlessly.

The Examiner notes, (as admitted prior art, see previous rejection)

that a termination condition can be a predetermined number of iterations,

and a lapse of a predetermined amount of time. Therefore, at the time of

the invention, it would have been obvious to one ordinarily skilled in the art,

to modify the combination of Poznanski's and Berger's termination

condition, one of the well known termination conditions as explained above.

The motivation for doing so would have been to utilize a well-known

termination condition for an iterative process, providing the benefit of

stopping an iterative process from running endlessly, with by the above set

forth well known method.

As per **claims 16, 17**, Claims 16 and17 set forth limitations similar to

claims 12 and 13 and are thus rejected for the same reasons and under the

same rationale.

As per **claim 22**, Poznanski further teaches wherein the approximate

target language translation comprises a predetermined translation selected

from among a plurality of predetermined translations (C.3.lines 60-63).

As per **claims 23 and 24**, Poznanski lacks explicitly teaching the

method implements a greedy algorithm, wherein iteratively modifying the

translation comprises incrementally improving the translation with each

iteration.

However, Berger teaches the method implements a greedy algorithm

and iteratively modifying the translation comprises incrementally improving

the translation with each iteration (C.23.lines 58, 59-his greedier

algorithms, C.24-28-details the algorithms and method, wherein each iteration improves the translation, C.15.lines 7-C.16.line31-his maximum entropy as determining a probability of correctness, the last iteration being the most/or maximum probability of being correct, claim 24, by definition, see maximum entropy and gain discussion C.16-C.28). Therefore, at the time of the invention, it would have been obvious to one ordinarily skilled in the art to modify Poznanski's repetitive algorithm with the greedy algorithm of Berger. The motivation for doing so would have been to have a practical greedy algorithm (C.23.lines 58, 59), which improves the translation with each iteration.

As per **claims 10, 26 and 33**, claim 10 sets forth limitations similar to claims 5, and 6, and is thus rejected for the same reasons and under the same rationale.

Conclusion

9.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lamont M. Spooner whose telephone number is 571/272-7613. The examiner can normally be reached on 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on 571/272-76033. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.
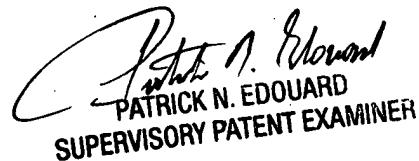
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